

**APPARATUS AND METHOD FOR LOCATING NONLINEARITIES IN A
COMMUNICATION CHANNEL BY USE OF TIME DOMAIN
REFLECTOMETRY**

ABSTRACT OF THE DISCLOSURE

A series of time domain reflectometry (tdr) measurements are made on a channel having nonlinear impairments as well as linear impairments. In a given measurement, the reflected signals from the impairments are digitized and sequentially stored in memory. The parameters characterizing the channel are then changed, preferably by biasing the line by means of a dc current. The changed bias condition modifies the impedance of nonlinear impairments in a nonlinear manner, while the impedance of linear impairments are unchanged by the bias. A second tdr measurement is initiated, and the reflected signals digitized and sequentially stored. The two sets of stored reflected signals are then sequentially compared, and corresponding signals having either the same amplitudes or linearly proportional amplitudes are identified as reflected from linear impairments, while those not the same, nor proportional, are identified as from nonlinear impairments.